

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.: 10/763,633  
Filing Date: January 22, 2004  
Appellant: Susan G. Yan  
Group Art Unit: 1795  
Examiner: Keith D. Walker  
Title: MEMBRANE ELECTRODE ASSEMBLY PREPARED BY  
DIRECT SPRAY OF CATALYST TO MEMBRANE  
Attorney Docket: GP-303571

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**APPELLANT'S REPLY BRIEF**

Appellant is submitting this Reply Brief in response to the Examiner's Answer mailed March 18, 2008. The Examiner's Answer included new grounds of rejection, particularly, claims 8 and 21-29 now stand rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement, and claims 8 and 21-29 now stand rejected under 35 USC §112, second paragraph, as being indefinite. By filing this Reply Brief pursuant to 37 CFR 41.41, Appellant maintains the appeal.

The Examiner has held that the language in claims 8 and 21 stating a "catalyst ink includes a catalyst, solvent and an ionomer having a concentration that is about half of the ionomer concentration of the catalyst as a ratio of ionomer to carbon in a final cathode or anode of the MEA" does not satisfy the written description requirement of

§112, first paragraph. In the Examiner's opinion, this claim language was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed invention at the time the application was filed. The Examiner supports this opinion by arguing that because the claims state that the catalyst ink includes a catalyst, solvent and ionomer and the claims also state that the ionomer in the catalyst is about half of the ionomer concentration of the catalyst in the final cathode or anode of the MEA, the specification does not support the ionomer concentration as claimed in the catalyst that is part of the catalyst ink.

At the outset, it is noted that the Examiner previously rejected this language in claims 8 and 21 under section §112, first paragraph, as failing to comply with the written description requirement, and that this rejection was withdrawn after Appellant amended the claims to more specifically claim this feature in the response after final dated September 13, 2007. Now that this application is on appeal, this rejection for some reason has returned.

MPEP 2163.02 talks about the standards for determining compliance with the written description requirement. That section states that an objective standard for determining compliance with the written description requirement includes, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." Further, "to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the following date sought, he or she was in possession of the invention...."

Paragraph [0016] of the specification states, "[i]n another embodiment, the catalyst ink includes two little ionomer for the proper ionomer to carbon ratio for the

desired fuel cell performance. An ionomer layer is sprayed on the membrane before the catalyst layer is sprayed on the membrane to provide the proper final ionomer to carbon ratio." Paragraph [0027] of the specification states that, "[i]n this embodiment, the ink 18 includes a catalyst, solvent and half the ionomer concentration (ionomer/carbon ratio=0.4/1). The final catalyst layer including the ionomer layer 34 yields a total ionomer/carbon ratio of approximately (0.8-1.2)/1." Thus, clearly Appellant's had in their possession at the time of filing the application that the catalyst material deposited on the membrane can include about half of the ionomer in the final anode or cathode of the MEA.

Appellant submits that one of ordinary skill in the art after reading claims 8 and 21 would reasonably understand that the ionomer concentration of the catalyst in the final cathode or anode of the MEA is not the ionomer concentration specifically in the catalyst that is part of the catalyst ink that is sprayed on the membrane during MEA production. A reasonable person of ordinary skill in the art would understand that the catalyst in the final cathode or anode MEA is the catalyst layer on the membrane that was made up of the various catalyst materials. The catalyst is referred to as an ink in the claimed process because it is wet when applied to the membrane. Once the catalyst dries and is part of the MEA along with the other materials, it is no longer specifically referred to as a catalyst ink. Those skilled in the art would at least sometimes refer to the final catalyst layer as the catalyst. Therefore, Appellant respectfully submits that it is improper for the Examiner to reject claims 8 and 21 under section §112, first paragraph, as failing to comply with the written description

requirement based on an issue of semantics, especially when that issue was not brought up earlier in the prosecution of the application.

It is the Examiner's opinion that claims 8 and 21 are indefinite under §112, second paragraph, because the ionomer concentration is based on being half of the ionomer concentration of the catalyst, and so, because the catalyst is an element this comparison is incorrect, and further that it is unclear what the relationship between the ionomer and the catalyst has with the ratio of ionomer to carbon.

MPEP 2173.02 states that claims that include a reasonable degree of particularity and distinctiveness should not be rejected under section §112, second paragraph, and that the definiteness of a claim must be analyzed, not in a vacuum, but in light of the content of the particular application disclosure, the teaching of the prior art and the claim interpretation that would be given by one possessing ordinary skill in the art at the time the invention was made.

A true catalyst may be platinum or other metals, but the use of the term "catalyst" in the fuel cell art does not refer specifically to those metals to persons of ordinary skill. Contrary, the catalyst is at least the combination of the metal and its support structure, which is almost always carbon. Paragraph [0004] of the specification states that, "[t]he anode and the cathode typically include finely divided catalytic particles, usually platinum (Pt), supported on carbon particles and mixed with an ionomer." This combination of materials is the catalyst in the fuel cell art, not just the platinum. Other locations in the background discussion talk about the catalyst being coated on membranes, substrates, decals, etc. Paragraph [0006] states that the catalyst and the membrane both can include an ionomer. Therefore, Appellant respectfully submits that

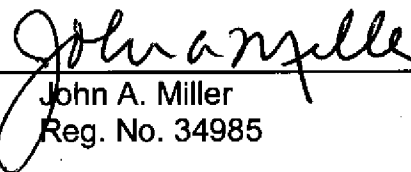
those skilled in the art clearly recognize that a catalyst for an MEA for a fuel cell is not just the specific metal element that causes the chemical reaction. Those skilled in the art, especially from the teachings of the prior art and the content of the specification, will not find it vague or indefinite that the catalyst on the MEA has an ionomer to carbon ratio. Contrary, those of ordinary skill in the art would find it indefinite if the catalyst layer on an MEA didn't have an ionomer to carbon ratio.

Appellant respectfully submits that this language in claims 8 and 21 is reasonable and clear to those skilled in the art.

The Examiner talks on page 9 of the Examiner's Answer about Appellant's argument that the oven and the heat lamp are not equivalent because the oven cannot allow the catalyst ink to be sprayed on the membrane as it is being dried, whereas the claimed heat lamp can. The Examiner states that, "[t]his limitation of spraying the membrane and at the same time drying the membrane is not recited in the claims." Independent claim 13 states, "spraying the catalyst ink on the membrane over several passes" and "drying the MEA under a heat lamp as the catalyst ink is being sprayed during several passes. So, apparently the claims actually do recite this limitation.

Respectfully submitted,

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